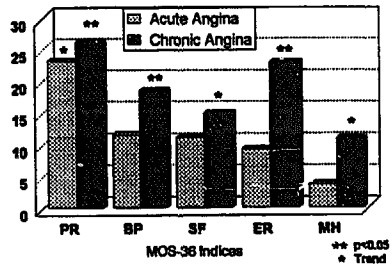
prior to and 6 months after undergoing elective PTCA. The MOS-36 includes 8 individual indices: physical roles (PR), bodily pain (BP), social functioning (SF), emotional roles (ER), mental health (MH), physical functioning, general health, and vitality. Acute angina, of less than 1 month duration, was noted in 42% of the total cohort (Group 1). Chronic angina was noted in 48% (Group 2). Demographic and procedural PTCA results were similar in the 2 groups. Changes in the MOS-36 indices, at baseline and at follow-up, were compared. Group 1 had only a positive trend in physical roles. However, Group 2 had statistically significant increases in physical roles, bodily pain, and emotional roles; a positive trend in mental health and social functioning was observed.

Differences From Baseline to Follow-up



In conclusion, 1) Differences exist in QOL changes after PTCA between patients with acute or chronic angina; 2) PTCA provides a significant positive effect on QOL on patients with chronic angina; 3) The quantitative evaluation of QOL may be an important outcome measurement for the evaluation of therapeutic strategies for patients with chronic angina.

961-75 Early Chronotropic Incompetence Predicts the Need for Atropine During Dobutamine Stress Echocardiography

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Atropine (AT) has been used at peak dobutamine (DB) infusion during dobutamine stress echocardiography (DSE) to increase sensitivity in patients (pts) with an inadequate heart rate (HR) response to DB. Earlier administration of AT may provide a more balanced inotropic and chronotropic response and potentially shorten study time. The purpose of this study was to determine whether HR at 20 mcg/kg/min (HR 20) was predictive of the need for AT at peak DB infusion. HR response during DSE (10, 20, 30, 40 mcg/kg/min) was retrospectively evaluated at each stage in 132 pts. AT was added at peak infusion if the HR was < 100. Pts were divided into two groups based upon the need for AT to achieve a HR ≥ 100.

	Base HR	HR 20	HR Peak	HR post AT
AT, n = 66	62 (40–86)	65 (48–97)	72 (53–86)	102 (76–144)
No AT, n = 64	74 (55–100)	95 (70–126)	120 (100–140)	–

Pts requiring AT were more likely to be taking beta blockers (78% versus 17% ($p < 0.001$). The groups were otherwise similar in terms of age and use of calcium blockers. HR 20 was assessed at different threshold levels in terms of appropriate (APPR) or inappropriate (INAPPR) identification (ID) of the need for AT.

HR 20	< 65	< 70	< 75
APPR ID	40/66 (61%)	47/63 (71%)	57/66(86%)
INAPPR ID	1/64 (2%)	2/64 (3%)	5/64 (8%)

HR 20 is predictive of the need for AT in the majority of pts. Early administration of AT may provide a more balanced inotropic and chronotropic response in pts who require it and shorten study time potentially reducing adverse side-effects. In this study if all pts with a HR 20 < 70 received early AT at 20 mcg/kg/min DB, this would represent 71% of all pts who would require AT at peak. The remaining 29% of AT requiring pts could receive it at peak. Prospective studies are required to further evaluate the advantage of this technique.

961-76 Beta-Blocking Antianginal Agent Does Not Change Pain Threshold and Beta-Endorphin Level in Patients With Silent Myocardial Ischemia

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Pain threshold (PT) and plasma level of β endorphin (END) are involved in the pathogenesis of silent myocardial ischemia (SMI). Since β blocking agents improve SMI episodes, these agents might influence PT or END through reducing myocardial ischemic stimuli. To investigate the effect of β blocking agents on PT and END, we measured PT and plasma level of END at rest and peak exercise (Ex) of treadmill testing (TT) in 32 patients (pts, 61 ± 8 years) with angiographic documented coronary artery disease before and after medication. All pts had SMI ≥ 1 (1 ≥ mm, 1 ≥ min, J 60 ms) in 24 h ambulatory ECG monitoring (AECG) and positive TT. Blood samples were obtained from the antecubital vein and END (pg/ml) was assayed using RIA. PT (mA) was determined by electrical skin stimulation to the forearm. Carteolol (CTL, 15 mg), β 1 selective and ISA (+), and nipradilol (NIP, 6 mg), non-selective and ISA (–), were given with a single blind, 2-week placebo-controlled design and pts were randomly allocated to CTL or NIP treatment arm. Results were shown below.

	PT	END		PT	END
Placebo	1.9/2.4*	10.0/14.0*	Placebo	1.7/2.2*	8.3/14.1*
CTL	1.7/2.1*	9.8/12.8*	NIP	1.8/2.3*	7.5/18.4*

Rest/Ex; figures in table, mean; *$p < 0.05$ vs Rest.

PT and END significantly increased by exercise in exercise-induced silent myocardial ischemia, and both CTL and NIP improved TT results and SMI episodes in AECG. However, either CTL or NIP did not significantly influence PT and END. *Conclusions;* The measurement of PT and END in pts on β blocking antianginal medication still provides useful information to elucidate the mechanisms of silent myocardial ischemia.

962 Cardiac Surgery Poster III

Tuesday, March 26, 1996, Noon–2:00 p.m.
Orange County Convention Center, Hall E
Presentation Hour: 1:00 p.m.–2:00 p.m.

962-1 Open Heart Surgery Without Transfusion: A Multimodality Strategy In Over Forty Consecutive Jehovah's Witness Patients

Todd K. Rosengart, Bob Helm, Ferdinand Velasco, William DeBois, Samuel Lang, Jeffrey P. Gold, O. Wayne Isom, Karl H. Krieger. *New York Hospital-Cornell Medical Center, New York, N.Y.*

Bleeding and blood transfusion remain substantial risks of open heart surgery (OHS), despite multiple individual advances in blood conservation technique. We consequently developed an integrated strategy, and prospectively applied this program for all 43 Jehovah's Witness patients (JW), aged 2–82 years, requiring OHS at our institution since 1992. Operations performed included coronary bypass (CBG) with internal mammary artery (n = 30, 1 reop), mitral valve replacement (n = 4, 2 reops), atrial septal defect repair (n = 4), aortic valve replacement (n = 3), and CBG/aortic/mitral valve replacement, chronic type 1 dissection repair, and (pediatric) aortic root reconstruction (n = 1 each). The integrated program included: 1) aprotinin (full dose regimen), 2) high dose erythropoietin (800 U/kg initial dose, 500 U/kg every other day), 3) maximum volume (continuous circuit) intraoperative autologous donation (target on-bypass hematocrit [hct] 18%, mean volume withdrawal 1200 ml), 4) retrograde autologous pump priming, 5) on-bypass hemoconcentration, and 6) small volume bypass circuitry. A subset analysis was performed of the 30 JW CBG pts vs 30 CBG pts operated on during the same time period who were evenly matched for established transfusion risk factors, including age, gender, red cell mass/hct, and aspirin/heparin use. There was no difference in mortality, stroke, renal failure, or myocardial infarction rate. No JW received any blood transfusion, compared with 17(57%) control pts (1.8 ± 2.8 exposures/pt, $p < 0.01$). Chest tube drainage 24 hr post-op was 380 ± 200 ml vs 1000 ± 300 ml ($p < 0.001$), and hcts were 32 ± 6% vs 28 ± 4% at 24 hr ($p < 0.001$) and 34 ± 3% vs 30 ± 4% at day 6 post-op ($p = 0.025$) in JW and control pts, respectively. The DRG-corrected post-op length of stay and overall costs were decreased in JW vs control pts. These results suggest that an integrated conservation strategy can markedly reduce the need for blood transfusions in OHS in a safe and cost-effective manner.

TUESDAY POSTER